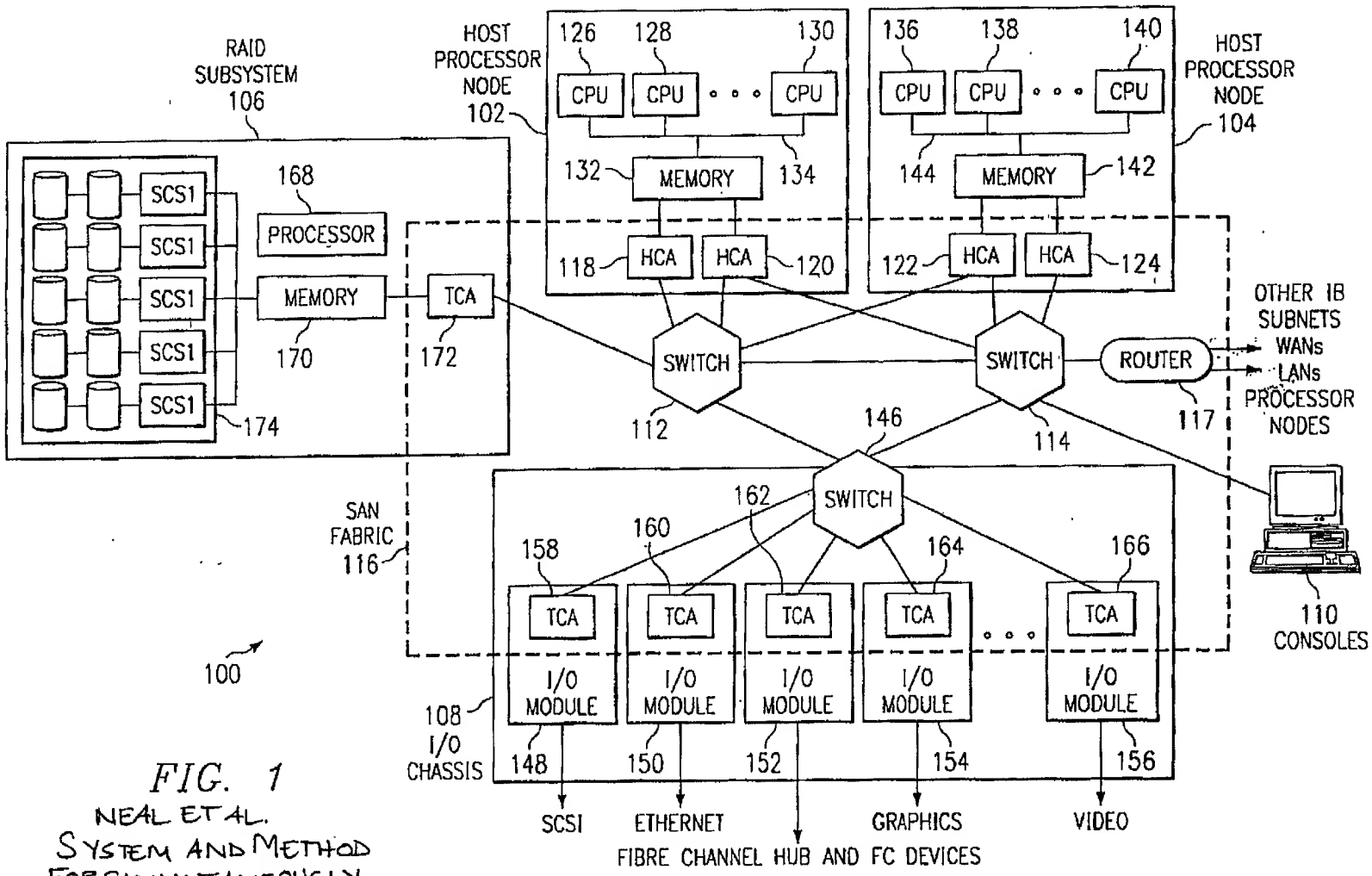

FIG. 1

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FIG. 2

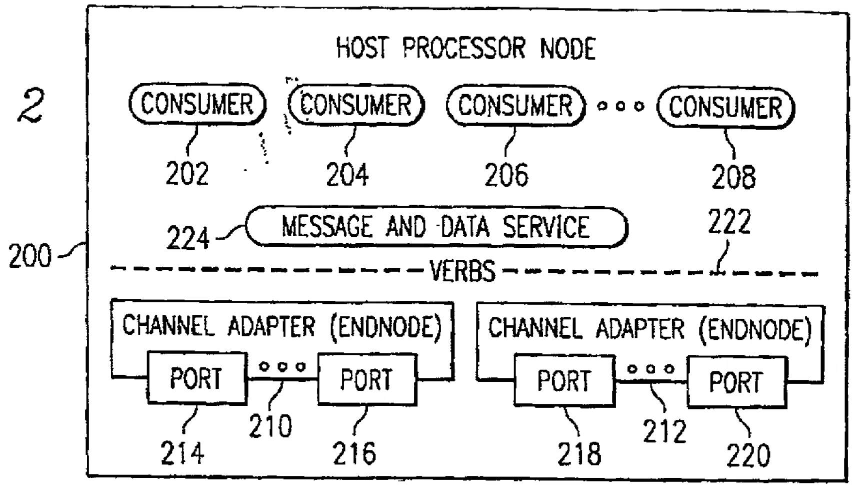

FIG. 3A

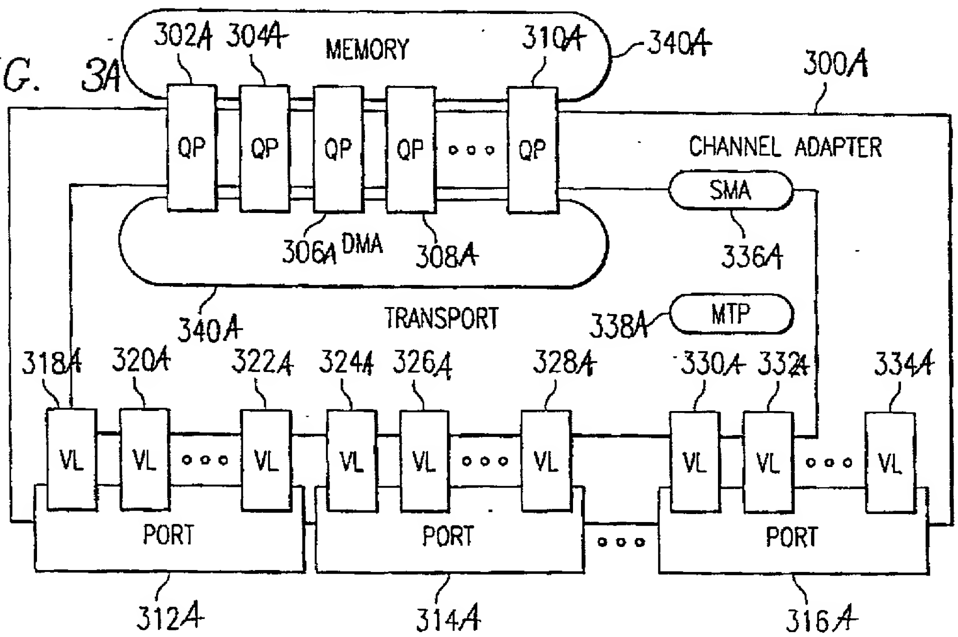

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Fig. 3B

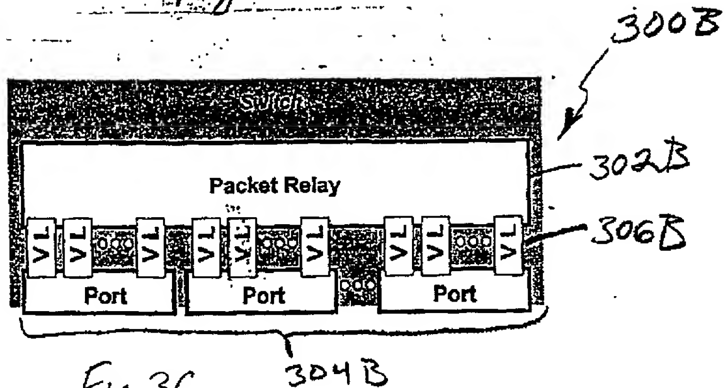

Fig. 3C

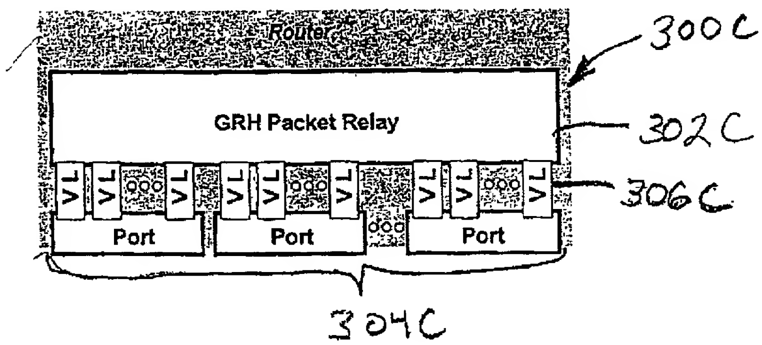

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FIG. 4

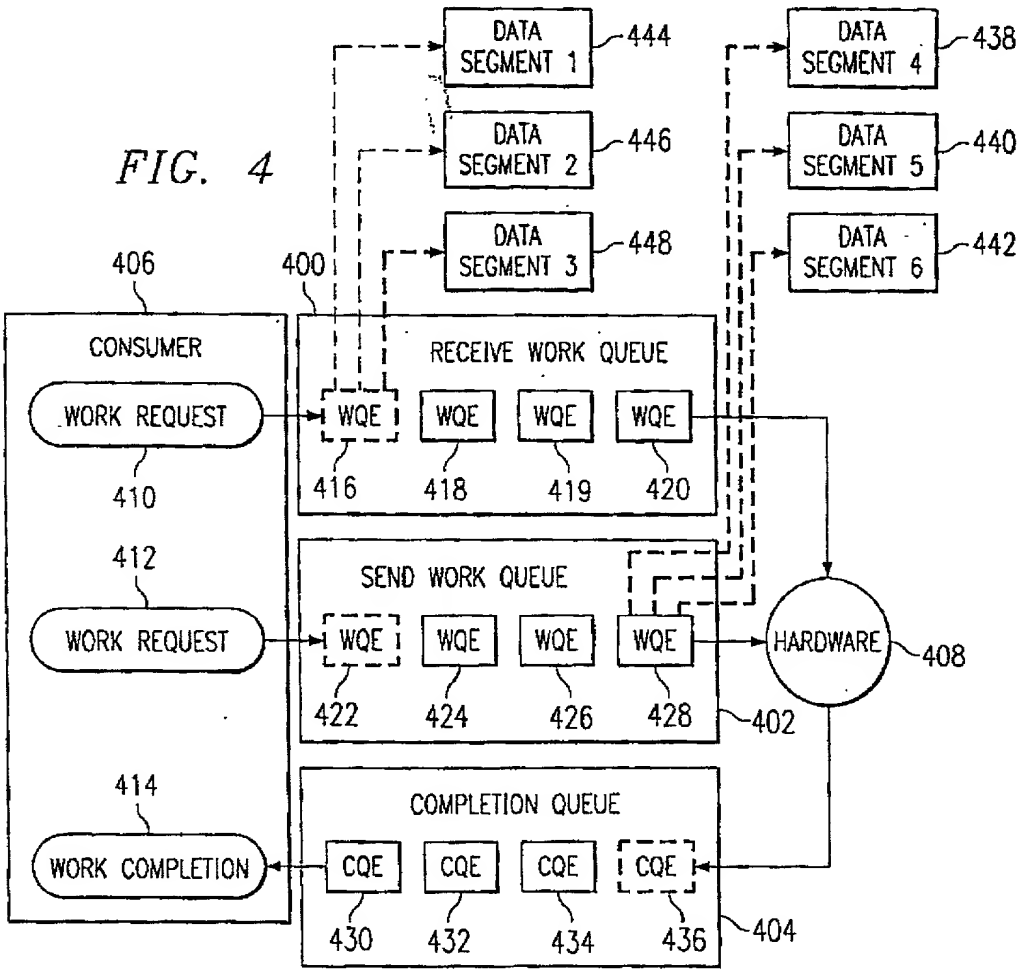

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FIG. 5

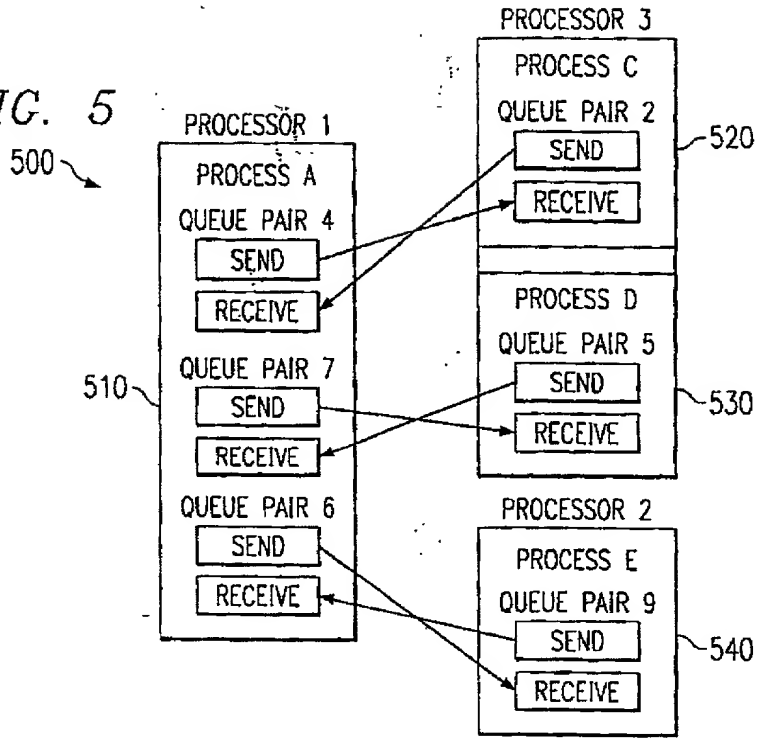

FIG. 6

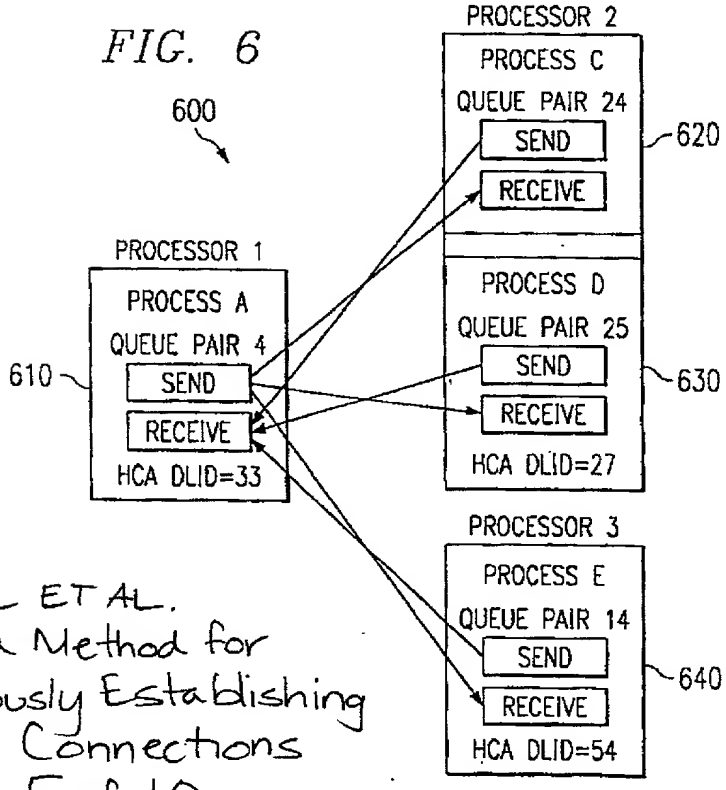

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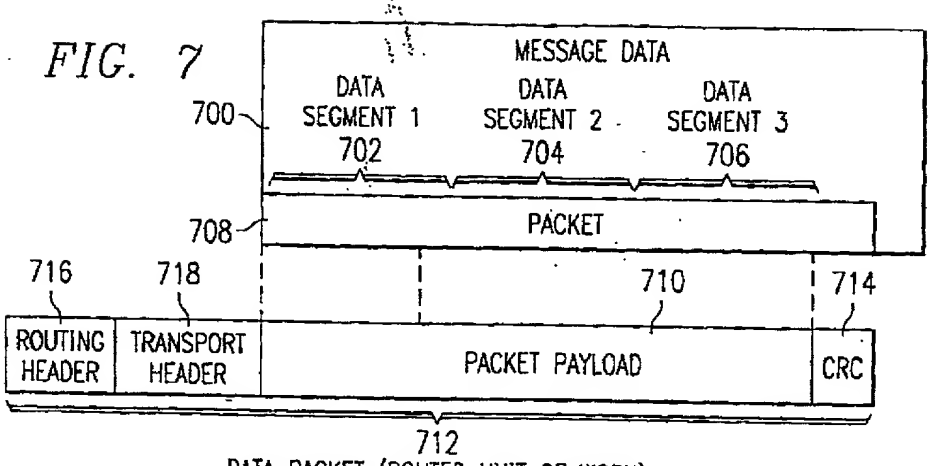
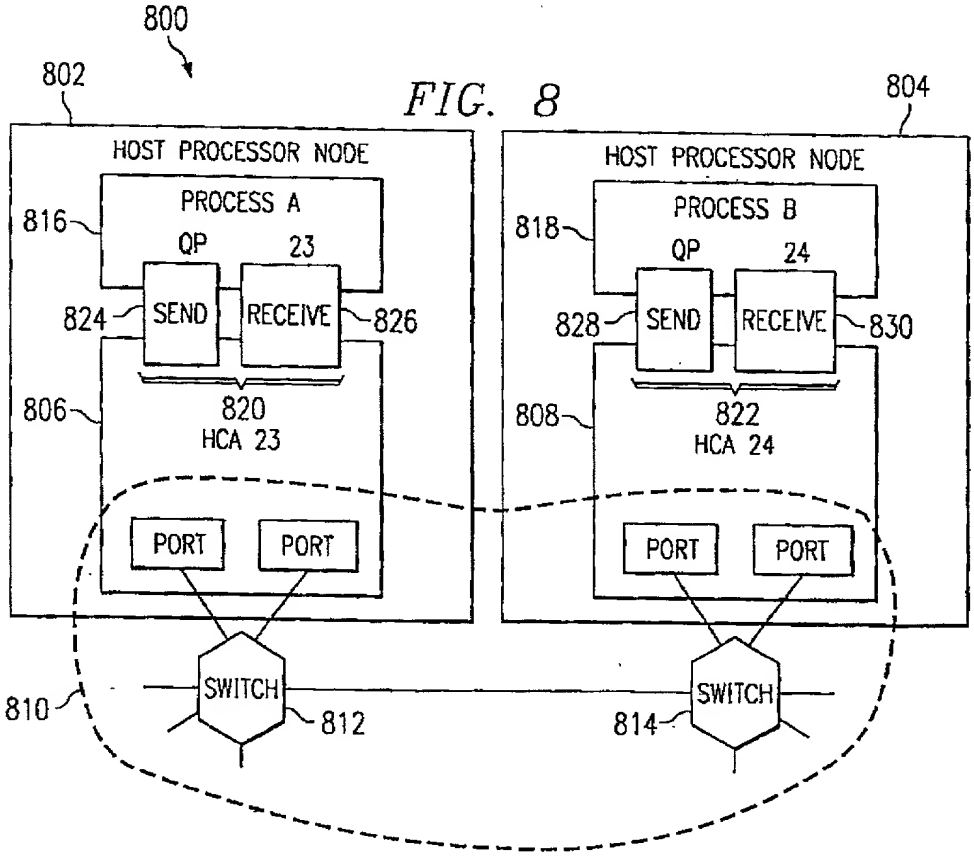
FIG. 7



DATA PACKET (ROUTED UNIT OF WORK)

FIG. 8



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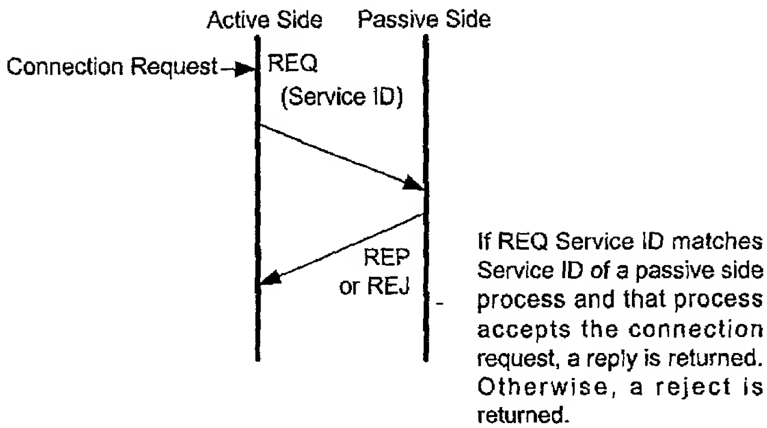
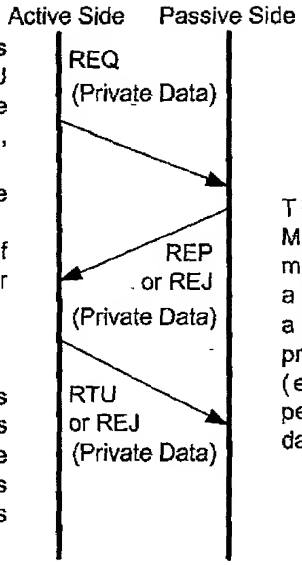

Active Side
Passive Side
Connection Request
REQ
(Service ID)
REP
or REJ
If REQ Service ID matches Service ID of a passive side process and that process accepts the connection request, a reply is returned. Otherwise, a reject is returned.

Figure 9

The Communication Management REQuest message is used to initiate the connection. The REQ, REP, and RTU contain a private data field. The present invention uses the private data field to communicate I/O consumer information, this includes:

- The lease period required by a service (e.g. for 1 or more connection)
- The resources required by a service (e.g. number of connections, number of QPs, capacity of read cache buffer space, capacity of fast write buffer space, QP depth, etc.)
- The address of request and response memory queues.

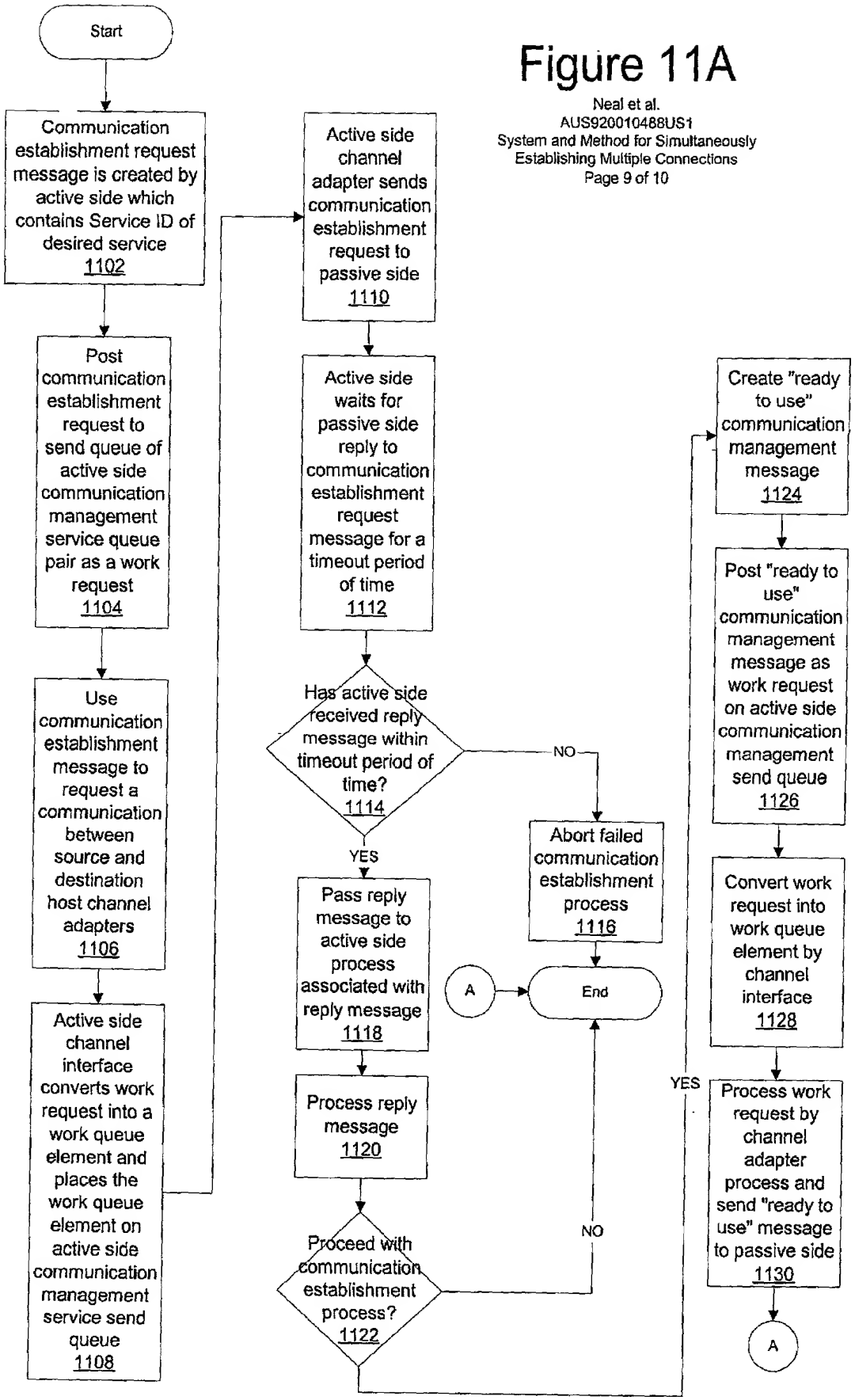
Communication Management ReadyToUse message is used to accept the passive side's REP. If the passive side's private data presented settings that are unacceptable to the active side (e.g. lease period is shorter than the active side's policy), then the active side can send a REJect message as a response to the passive side's REP.



The Communication Management REPly message is used to accept a connection. Alternatively, a REJ can be used to propose alternate settings (e.g. a shorter lease period), through the private data of the REJ.

Figure 10

Figure 11A


Start
Communication establishment request message is created by active side which contains Service ID of desired service 1102
Post communication establishment request to send queue of active side communication management service queue pair as a work request 1104
Use communication establishment message to request a communication between source and destination host channel adapters 1106
Active side channel interface converts work request into a work queue element and places the work queue element on active side communication management service send queue 1108
Active side channel adapter sends communication establishment request to passive side 1110
Active side waits for passive side reply to communication establishment request message for a timeout period of time 1112
Has active side received reply message within timeout period of time? 1114
NO
YES
Abort failed communication establishment process 1116
A
End
Pass reply message to active side process associated with reply message 1118
Process reply message 1120
Proceed with communication establishment process? 1122
NO
YES
Create "ready to use" communication management message 1124
Post "ready to use" communication management message as work request on active side communication management send queue 1126
Convert work request into work queue element by channel interface 1128
Process work request by channel adapter process and send "ready to use" message to passive side 1130
A

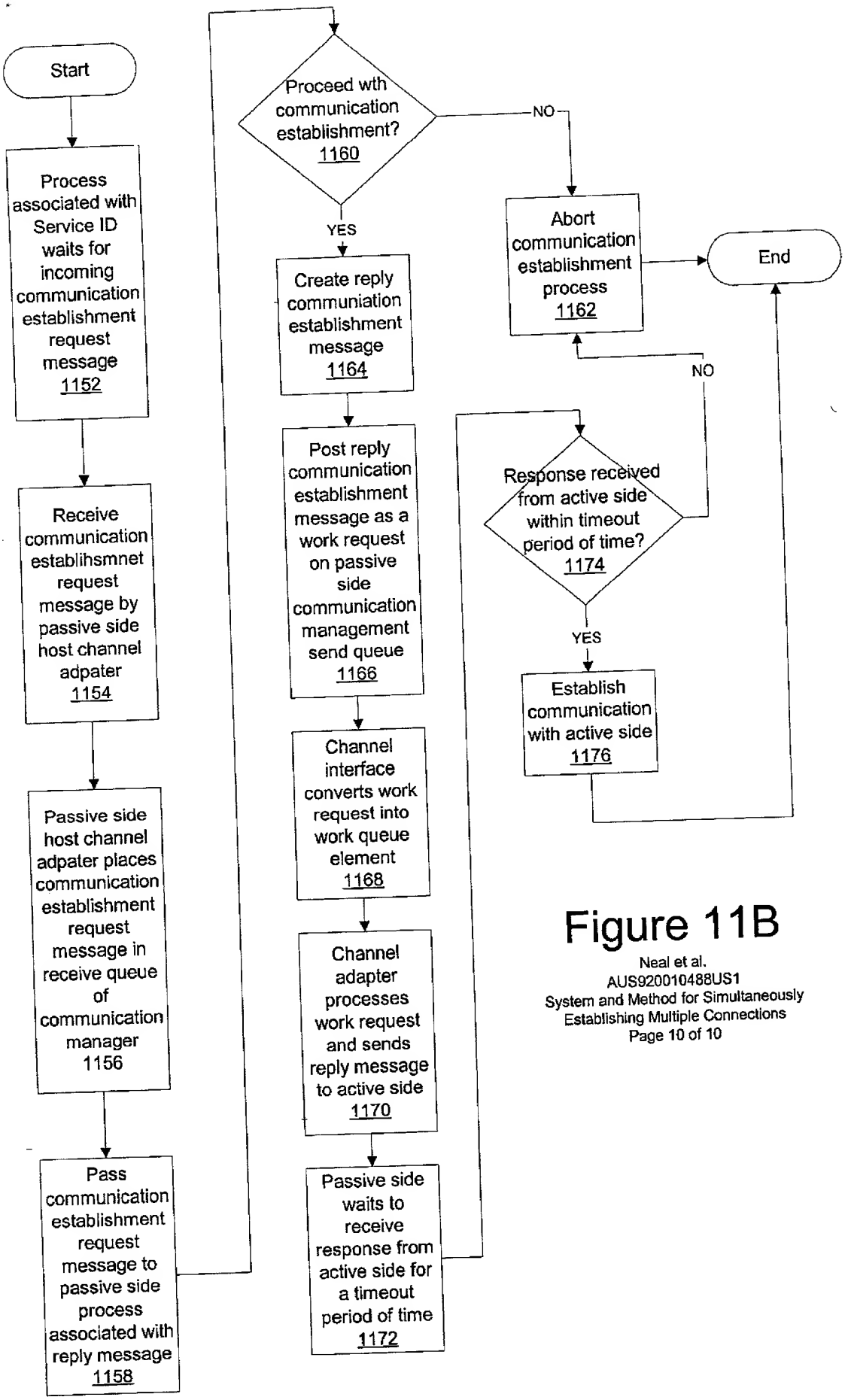

Start
Process associated with Service ID waits for incoming communication establishment request message 1152
Receive communication establihsmnet request message by passive side host channel adpater 1154
Passive side host channel adpater places communication establishment request message in receive queue of communication manager 1156
Pass communication establishment request message to passive side process associated with reply message 1158
Proceed wth communication establishment? 1160
NO
YES
Abort communication establishment process 1162
End
Create reply communiation establishment message 1164
Post reply communication establishment message as a work request on passive side communication management send queue 1166
Channel interface converts work request into work queue element 1168
Channel adapter processes work request and sends reply message to active side 1170
Passive side waits to receive response from active side for a timeout period of time 1172
Response received from active side within timeout period of time? 1174
NO
YES
Establish communication with active side 1176

Figure 11B